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EXAMINER	
JIANG, YONG HANG	

ART UNIT	PAPER NUMBER
2612	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,900	SOLBERG ET AL.	
	Examiner	Art Unit	
	YONG HANG JIANG	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/11/2005, 6/20/2006, 11/9/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 9 objected to because of the following informalities: on line 3, "cording" should be --according--.

Claim 19 objected to because of the following informalities: on line 4, the word "in" appears to be missing after the words "detection quality".

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 5 and 25 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 5, the limitation "said digital messages" rendered the claim indefinite as it is unclear which digital messages the claim is referring to. Claim 5 depends on claim 4; two different digital messages are mentioned in claim 4.

Claim 25 is equivalent to claim 5; therefore it is rejected for the same reasons as claim 5 above.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claim 1-5, 7-13, 16-18, 21-25, 27-33, and 36-38 rejected under 35 U.S.C. 102(e) as being anticipated by Horwitz et al. (US 6,617,962).

Regarding claim 1 and 21, Horwitz discloses a method and a transponder reader arranged to read data from transponders, wherein each of said transponders send data according to one transponder signalling protocols (via reader for tags operating multiple frequencies, Abstract),

- said transponder signalling protocol is selected from a number of different transponder signalling protocols (via tags operating multiple frequencies, Abstract), and

- a first and a second transponder signals according to different protocols (via tags 2 and 4 operating on two different frequencies, Col. 5, lines 41-43),

- said transponder reader comprises an antenna means for sending a first analogue signal to one of said transponders and receiving a second analogue signal from said transponders (via radio frequency module 12 for interrogating tags and receiving information transmitted by the tags, Col. 6, lines 52-58), and

- said transponder reader further comprises means for analysing said signal received by said antenna means (via interrogator control module 11 including data interface and protocols stage 34 to recover data from the received signals, Col. 8, lines 1-7) wherein

- said transponder reader comprises a digital processing means (data interface and protocols stage 34, Col. 8, lines 1-7),

- said transponder reader comprises an analogue to digital converter arranged to receive said second analogue signal from said second analogue signal to supply said first digital processing means (via inherent analogue to digital converters in radio frequency modules to convert received signals to digital form, Fig. 1),

- said digital processing means comprises analysing means arranged to analyse said received digital signals according to at least two different transponder signaling protocols (via data interface and protocols stage 34 for processing and handling signals received, Col. 8, lines 1-9).

Regarding claim 2 and 22, Horwitz discloses said analysing means comprises first demodulating, detecting and decoding means for demodulating, detecting and decoding digital signals according to a first transponder signalling protocol (via radio frequency module 12 for demodulating, detecting and decoding tag signals in a first frequency) and second demodulating, detecting and decoding means for demodulating, detecting and decoding digital signals according to a second transponder signalling protocol (via radio frequency module 14 for demodulating, detecting and decoding tag signals in a second frequency). (Col. 9, line 16 to Col. 10, line 35)

Regarding claim 3 and 23, Horwitz discloses said transponder reader further comprises transmitting means for sending said analysed first digital signal to post-processing means (via bus 19 coupling radio frequency modules to interrogator control module 11, Col. 6, lines 52-54).

Regarding claim 4 and 24, Horwitz discloses said antenna means comprises means for controlling the antenna characteristics (via application interface stage 36 controlling operation of a selected radio frequency module or modules 12, 14, 16, or 18, See Col. 7, lines 54-58),

- said antenna means comprises a digital interface for receiving digital messages from said digital processing means and transmitting digital messages to said digital processing means (via bus 19 receiving messages generated by operator commands, and transmitting messages received from interrogated tags, Col. 7, lines 54-58),

- said antenna means controls said antenna characteristics in dependence of said received digital messages (via application interface stage 36 receives digital messages comprising user commands and tag type selections and sets the operation of the selected radio frequency module or modules, Col. 7, line 58-63, Col. 8, lines 9-12), and

- said antenna means transmit digital messages relating to the antenna characteristics to said digital processing means (via radio frequency module comprising an antenna transmits signals received from tags in a frequency band related to the antenna, See Col. 5, line 63 to Col. 6, line 32).

Regarding claim 5 and 25, Horwitz discloses said digital messages comprises information comprising antenna ready to send (via operator initiating reader to send interrogation signals, the initiation command on the reader is equivalent to antenna ready to send, Col. 7, lines 58-63).

Regarding claim 7 and 27, Horwitz discloses said digital processing means supply second digital signals to a digital to analogue converter for converting said digital signal to said first analogue signal (via interrogator control module 11 sending an interrogation signal on radio frequency module 14), - said digital to analogue converter supplies said first analogue signal to said antenna means for transmission (radio frequency module 14 sending interrogation signal to tags). (Col. 6, lines 52-58)

Regarding claim 8 and 28, Horwitz discloses said digital processing means comprises means for demodulating said first digital signal according to a first and at least a second demodulation scheme (via data interface and protocols stage 34 handling of data protocols based on the tags types being controlled, See Col. 8, lines 1-18).

Regarding claim 9 and 29, Horwitz discloses said digital processing means comprises means for detection of symbols from said demodulated digital signal according to a first and at least a second symbol detection scheme (via data interface and protocols stage 34 handling of data protocols based on the tags types being controlled, Col. 8, lines 1-18).

Regarding claim 10 and 30, Horwitz discloses said digital processing means comprises means for decoding symbols from said detected symbols according to a first and at least a second symbol decoding scheme (via data interface and protocols stage 34 handling of data protocols based on the tags types being controlled, Col. 8, lines 1-18).

Regarding claim 11 and 31, Horwitz discloses said decoding comprises performing an error detection check e.g. a cyclic redundancy check (See Col. 9, lines 6-9).

Regarding claim 12 and 32, Horwitz discloses said transponder reader comprises means for detecting which of said first and at least second means for demodulating, detection, and decoding that produces the best signal detection quality and using said means (via interrogator control module 11 detecting which radio frequency module is receiving signals from tags, See Fig. 1).

Regarding claim 13 and 33, Horwitz discloses an operator selects which demodulator, detector and decoder to be used by said digital processing means (via LCD touch panel 38 for accepting commands and displaying information concerning the operation of the radio frequency id system, Col. 7, lines 57-53).

Regarding claim 16 and 36, Horwitz discloses said transponder reader comprises means for deciding which of at least said two different transponder signalling protocols that said transponder is using in responding to said first analogue signal, and using said protocol (via interrogator control module 11 detecting which radio frequency module is receiving signals from tags, See Fig. 1).

Regarding claim 17 and 37, Horwitz discloses said decision is performed in a start up sequence (via reader sending out interrogation signals to tags), and that said transponder reader assumes that all transponders are working according to said detected protocol (via when the tags present responding with a fixed frequency band, and no other signals outside the fixed frequency are detected, See Fig. 1).

Regarding claim 18 and 38, Horwitz discloses an operator selects the appropriate transponder signaling protocol (via LCD touch panel 38 for accepting commands and displaying information concerning the operation of the radio frequency id system, Col. 7, lines 57-53).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claim 6 and 26 rejected under 35 U.S.C. 103(a) as being unpatentable over Horwitz as applied to claim 1 and 21 above, and further in view of MacLellan (US 5,649,296).

Regarding claim 6 and 26, Horwitz discloses a half duplex protocol for tags operating at 458-917 MHz (See Col. 6, lines 12-13).

Horwitz did not specifically disclose a full duplex protocol for tags operating at other frequencies. MacLellan teaches a full duplex system to allow an interrogator and tag to transmit continuously during the same time period to achieve the advantage of ease of maintaining time slot synchronization. (See the Abstract; Col. 1, line 61 to Col. 2, line 10)

From the teachings of Horwitz, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the transponder reader of Horwitz to include a full duplex protocol for tags operating at other frequencies as taught by MacLellan to achieve the advantage of ease of maintaining time slot synchronizations by using a full duplex protocol.

3. Claim 14 and 34 rejected under 35 U.S.C. 103(a) as being unpatentable over Horwitz as applied to claim 1 and 21 above, and further in view of MacLellan (US 5,649,296) and Kanemasa et al. (US 4,769,808).

Regarding claim 14 and 34, Horwitz did not specifically disclose one of at least two different transponder signaling protocol is a full duplex protocol.

MacLellan teaches a full duplex system to allow an interrogator and tag to transmit continuously during the same time period to achieve the advantage of ease of maintaining time slot synchronization. (See the Abstract; Col. 1, line 61 to Col. 2, line 10)

From the teachings of MacLellan, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the transponder reader of Horwitz to include one of at least two different transponder signaling protocol is a full duplex protocol as taught by MacLellan to achieve the advantage of ease of maintaining time slot synchronizations by using a full duplex protocol.

The combination of Horwitz and MacLellan did not specifically disclose said first analogue signal is subtracted from said second analogue signal to remove the contribution from the first analogue signal from the reception of said second analogue signal.

Kanemasa teach that in order to reduce echo in a full duplex communication system, a first signal is subtracted from a received signal to remove the contribution from the first signal from the reception of the second signal. (See Col. 3, lines 44-54)

From the teachings of Kanemasa, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Horwitz and MacLellan to include said first analogue signal is subtracted from said second analogue signal to remove the contribution from the first analogue signal from the reception of said second analogue signal as taught by Kanemasa to reduce unwanted contributions in the received signal, thereby improving signal quality.

4. Claim 15 and 35 rejected under 35 U.S.C. 103(a) as being unpatentable over Horwitz in view of MacLellan and Kanemasa as applied to claim 1, 14, 21, and 34 above, and further in view of Rodgers (US 6,831,562).

Regarding claim 15 and 35, the combination of Horwitz, MacLellan, and Kanemasa did not specifically disclose said first analogue signal is boosted before being subtracted from said second analogue signal.

Rodgers teaches using an amplifier to amplify signals received before providing the signals to detectors. (See Col. 43, line 63 to Col. 44, line 64). From the teachings of Rodgers, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Horwitz, MacLellan, and Kanemasa to include said first analogue signal is boosted before being subtracted from said second analogue signal as taught by Rodgers to improve the received signal quality before the signals are used, thereby improving performance of the system.

5. Claim 19 and 39 rejected under 35 U.S.C. 103(a) as being unpatentable over Horwitz as applied to claim 1, 4, 21, and 24 above, and further in view of Stilp (US 2004/0160324).

Regarding claim 19 and 39, Horwitz did not specifically disclose said transponder reader comprises means for setting antenna characteristics in dependence of detected environmental characteristics so as to achieve optimal signalling detection quality in relation to the electromagnetic environment.

Stilp teaches a RFID reader that detects changes in the radio environment to make changes to the modulation scheme, power level, or other parameters of the reader to accommodate the changes detected. (See Col. 32, lines 18-22)

From the teachings of Stilp, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Horwitz to include

said transponder reader comprises means for setting antenna characteristics in dependence of detected environmental characteristics as taught by Stilp to change the modulation scheme, power level, or other parameters of the reader to accommodate the changes detected, thereby improving reader functionality.

6. Claim 20 and 40 rejected under 35 U.S.C. 103(a) as being unpatentable over Horwitz as applied to claim 9 and 24 above, and further in view of Murdoch (US 5,153,583).

Regarding claim 20 and 40, Horwitz did not specifically disclose the phase of said first analogue signal is controlled.

Murdoch teaches an interrogator with a stable master time reference source. The time reference source is used to operate the frequency (phase) of the powering field. A transponder's carrier oscillator may be phase coherently locked to the master time reference in the interrogator through the interrogator's powering field. Phase coherent locking of the signal carrier to the master time reference provides substantial advantages over non-coherent carrier generation. The carrier signal can be coherently detected at the interrogator using well understood coherent detection principles with the master time reference serving as the frequency reference to the coherent detection circuits. Coherent detection provides optimum signal to noise detection, excellent interference suppression and sideband rejection (See Col. 14, lines 24-39).

From the teachings of Murdoch, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Horwitz to include the phase of said first analogue signal is controlled as taught by Murdoch to

phase lock a transponder's carrier oscillator to the master time reference source in the reader, thereby providing optimum signal to noise detection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YONG HANG JIANG whose telephone number is (571)270-3024. The examiner can normally be reached on M-F 9:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian A. Zimmerman can be reached on 571-272-3059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Y. J./
Examiner, Art Unit 2612

/Brian A Zimmerman/
Supervisory Patent Examiner, Art Unit 2612